

REMARKS

Claims 1, 2, 6, 7, 11-17, 19-28 and 30-32 are pending in the application.

Claim Rejections - 35 U.S.C. § 103

Claims 1, 2, 7, 26, 27, 28 and 32 were rejected under 35 U.S.C. § 102(b) as being unpatentable over **Tatsuhiko** (JP 09-058650); claims 6, 17, 30 and 31 were rejected under 35 U.S.C. § 103(a) as being unpatentable over **Tatsuhiko** in view of **Akao** (US 5,358, 785); claims 11 and 12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over **Tatsuhiko** in view of **Miyake** (US 5,942,320); claim 13 was rejected under 35 U.S.C. § 103(a) as being unpatentable over **Tatsuhiko** in view of **Akao** in further view of **Miyake**; and claims 14-16 and 19-25 were rejected under 35 U.S.C. § 103(a) as being unpatentable over **Tatsuhiko** in view of **Frisk** (WO 00/44632 with US 6,974,612 cited as an English equivalent).

Favorable reconsideration is requested.

Tatsuhiko discloses a laminate comprising a base paper having specific physical properties and a resin layer containing a polyamide resin obtained by copolymerization of m-xylene diamine and adipic acid. Further, it is mentioned that an arbitrary layer composition can be allowed as long as the foregoing polyamide resin is contained as the barrier layer; and there is a description that nylon 6, a different kind of polyamide resin other than the foregoing polyamide, and a resin other than the polyamide resin may be blended at the specific ratio or lower as the barrier layer.

However, Tatsuhiko discloses a composition mainly using the foregoing polyamide resin as the barrier layer, and is not one with the composition having EVOH as the barrier layer as in the present invention.

Paragraphs 3 and 4 of Tatsuhiko discloses that the invention is limited to improvement in processability of a paper container comprising a laminate of a paper with a resin layer of a polyamide obtained by polycondensation of m-xylene diamine and adipic acid and improvement in prevention of deformation of the paper container thereof.

In addition, it is disclosed in paragraph 8 that a resin other than the foregoing polyamide resin may be blended to the polyamide resin as long as its content is below 40%, but EVOH resin is merely one example among such resins. Further, it is disclosed in paragraph 9 that other resin layer may be additionally compounded with the polyamide layer, but EVOH resin is still merely one example among such resins.

Except for the above-mentioned section, there is no description in Tatsuhiko regarding EVOH, and there is no description regarding the specific case in which the EVOH resin layer is laminated by co-extrusion thereby using it as the barrier layer.

Further, an example of the composition in which a polyethylene imine undercoat is attached to a base paper is disclosed in claim 3. However, in Tatsuhiko, polyethylene imine is coated with the object to further strengthen the adhesion of a specific base paper with a specific polyamide resin at the time when a multi-resin layer comprising a polyamide resin/an adhesive resin/and polyethylene is laminated by co-extrusion on the base paper, as shown in Example 2 of Tatsuhiko; thus it does not have the object to at least laminate the adhesive resin layer (a)/EVOH

(b)/and the adhesive resin layer (a') by co-extrusion thereby enabling the adhesion of the base paper with the adhesive resin layer (a) by the low-temperature processing at 290 °C or lower, as recited in the present claims.

Sufficient adhesion strength between the base paper and the adhesive resin of the base paper's side in the multi-resin layer cannot be obtained only by merely forming the adhesive resin layer on the base paper's side of the barrier EVOH layer, and thus the object of the present invention cannot be achieved.

On the other hand, in the present invention as recited in the claims polyethylene imine is coated on the surface of the base paper to be laminated with the multi-resin layer, thereby enabling high adhesion strength between the base paper and the adhesive resin on the base paper's side of the multi-resin layer at the processing temperature of 290 °C or lower or even at a low processing temperature such as 250 °C.

Coating of polyethylene imine in Tatsuhiko has the object to further strengthen the adhesion of a specific base paper with a specific polyamide resin at the time when a multi-resin layer comprising a polyamide resin/an adhesive resin/and polyethylene is laminated by co-extrusion on the base paper, as shown in Example 2 of the specification Tatsuhiko; thus it does not have the object to adhere the base paper with the adhesive resin layer, nor is there any description at all in Tatsuhiko regarding its effect.

The present invention makes it possible to laminate the multi-resin layer containing the EVOH layer to the base paper by co-extrusion at the low temperature of 290 °C or lower only by satisfying the composition of the present invention, *i.e.*, the composition in which the base paper

is coated with polyethylene imine and at least laminated by co-extrusion with the adhesive resin layer/EVOH/and the adhesive resin layer. In other words, only by complying all of these requirements it becomes possible to obtain the laminate achieving the object of the present invention, that is, the laminate having high adhesion strength between the base paper and the co-extrusion laminated resin layer even at the low processing temperature where the barrier resin does not deteriorate as well as excellent barrier properties with low odor.

(1) Applicants respectfully submit that the present invention as recited in the claims provides unexpected results due to the use of the combination of adhesive layers in the recited structural relationship.

The Office Action takes the position that it would have been obvious to include a second adhesive layer. However, as demonstrated in the present specification and the attached declaration, the adhesive layers in the recited structural relationship provides unexpected results. The present specification describes that without the adhesive layer on both sides of the barrier layer, the barrier layer in a molten state during processing is directly contacted with the air until it is contacted with the base paper causing oxidative degradation, and that the barrier layer has a non-uniform thickness due to direct contact with the base paper. (Specification, page 4.) A declaration under 37 C.F.R. § 1.132 is also attached which demonstrates that the second adhesive resin layer formed on the base paper's side of the barrier layer has an unexpected and important effect of protecting the barrier layer.

(2) Applicants respectfully submit that Tatsuhiko does not disclose “wherein the multi-resin layer is bondable, at 290°C or lower at the outlet of the die, onto the base paper without thermal decomposition of the barrier resin layer” as recited in claim 1.

Although existence of the adhesive resin layer formed on the base paper's side of the barrier EVOH layer has a special meaning, the object of the present invention cannot be achieved easily by merely providing the adhesive layer. In other words, high adhesion strength between the base paper and the adhesive resin layer cannot be obtained only by the composition of the foregoing Experimental Example 2 when the processing temperature of the multi-resin layer is 290 °C or lower. This is demonstrated in the Examples and Comparative Examples in the specification of the present invention.

When the multi-resin layer was laminated by co-extrusion at the processing temperature of 280 °C in the structure of Comparative Example 1 in the specification of the present invention, sufficient adhesion strength between the base paper and the adhesive resin on the base paper's side of the multi-resin layer could not be obtained.

In Comparative Example 2, lamination of the multi-resin layer by co-extrusion at 315 °C gave sufficient adhesion strength between the base paper and the adhesive resin on the base paper's side of the multi-resin layer, but the odor strength of the laminate was so strong that the gustatory evaluation with a molded paper container was low.

In the present invention, the processing temperature of the multi-resin layer needs to be 290 °C or lower. Low processing temperature of 290 °C or lower is a necessary condition not to deteriorate the barrier resin layer in the multi-resin layer; because the EVOH resin of the barrier

resin layer is not decomposed thermally in the extrusion equipment, the barrier properties are not damaged and the problems such as gelation and film breaking are prevented. In addition, deterioration of the multi-layered laminate film by oxidation can be reduced to a minimum, and the odor of the laminate itself can be reduced. Tatsuhiko is silent about this processing temperature of 290 °C or lower.

For at least the foregoing reasons, claims 1, 2, 6, 7, 11-17, 19-28 and 30-32 are patentable over the cited references. Accordingly, withdrawal of the rejections of claims 1, 2, 6, 7, 11-17, 19-28 and 30-32 is hereby solicited.

In view of the above remarks, Applicants submit that the claims are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

Application No. 10/537,226
Art Unit: 1782

Response under 37 C.F.R. §1.111
Attorney Docket No. 100464

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,
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Attachment: Declaration under 37 C.F.R. § 1.132